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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/884,978	06/21/2001	Shin Doi	209668US2	3265

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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER

LAZOR, MICHELLE A

ART UNIT	PAPER NUMBER
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1734

DATE MAILED: 05/21/2003

12

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/884,978

Applicant(s)

DOI ET AL.

Examiner

Michelle A Lazor

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 2 May 2003
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 2, 3 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear how these claims further limit the claimed apparatus.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 – 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doi et al. (U.S. Patent No. 6190455 B1) in view of the admitted prior art and Subramanian et al. (U.S. Patent No. 6270579 B1).

Regarding Claims 1 and 7, Doi et al. disclose a finely-divided powder spray apparatus having a spray nozzle pipe for discharging finely-divided powders from the tip together with a gas flow (column 2, lines 5 – 14) onto large liquid crystal displays (column 2, lines 27 – 33) and a moving-speed control means which controls a moving-speed of the tip of said spray nozzle pipe depending on how much coating material is to be sprayed on a substrate (column 4, lines 36

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– 42), but does not disclose moving the tip of said spray nozzle pipe based on a density distribution of the finely-divided powders deposited on the surface of said liquid crystal display to be sprayed in a trial spray. However, the admitted prior art discloses difficulty in uniformly spraying onto large liquid display panels (page 3, lines 2 – 8) and Subramanian et al. disclose a system which controls the uniformity of a coated material. Subramanian et al. teach adjusting the volume of a coated material on a substrate based on the thickness uniformity of a coated material on the surface of a test substrate (column 3, lines 29 – 37). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to move the tip of said spray nozzle pipe based on the thickness of a coated material on the surface of a test substrate, to more easily control and adjust the thickness uniformity of the coated material applied on a substrate.

Regarding Claims 2 and 3, Subramanian et al. disclose a processor that receives measured data and determines the overall thickness by classical signal analysis and estimation algorithms (column 6, lines 60 – 64). Therefore one of ordinary skill in the art at the time of the invention would appreciate how to manipulate the measured data and fit the points into an equation (i.e. a quadratic function, which is known to be a type of algorithm) in order to be able to predict the reduction rate of the density of the deposited finely-divided powders based on the distance between a peak point of powder density and a spray point.

Regarding Claims 4 – 6, Doi et al. disclose the moving-speed of the tip of said spray nozzle pipe is capable of being decreased under control as the reduction rate of the density of said deposited finely-divided powders is increased (column 4, lines 36 – 42).

*Response to Arguments*

Applicant has argued the subject matter of Claims 2, 3, and 7 further limit the subject matter defined in Claim 1. Examiner agrees, however, Examiner believes it is unclear to what extent the apparatus is changed or limited with respect to the configuration of the apparatus and how the apparatus operates. Therefore the Examiner maintains the rejection under 35 U.S.C. § 112, second paragraph.

Applicant also argues one of ordinary skill in the art would not be motivated to combine the Doi et al. and Subramanian et al. references. Examiner respectfully disagrees. Although Subramanian et al. is dealing with decreasing substrate sizes as opposed to Applicant's increasing substrate sizes, the apparatus disclosed by Subramanian et al. may be used in a variety of capacities, including in an environment where the substrate size is large, as long as it is capable of functioning as desired.

In addition, Applicant argues the Subramanian et al. reference would not be combined with the Doi et al. reference by one of ordinary skill in the art since Subramanian et al. disclose using a spraying liquid, rather than particulate matter as in Doi et al. and the present claimed invention. Examiner again respectfully disagrees. The Subramanian et al. reference is used as a teaching reference, which discloses a system that controls the uniformity of a coated material. One of ordinary skill in the art wishing to control the uniformity of a coated material would be motivated to use the Subramanian et al. reference to more easily control and adjust the thickness uniformity of a coated material applied on a substrate.

Finally, Applicant argues the Subramanian et al. reference uses thickness uniformity data rather than density data. However, this is only intended use. The spraying apparatus disclosed

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in the present claimed invention uses a controller (Specification, page 12, line 20 – page 13, line 15) to determine the moving-speed of the tip of a spray nozzle pipe. Since the Subramanian et al. reference also uses a controller (64) for controlling the uniformity of a coated material (column 6, line 60 – column 7, line 4), one of ordinary skill in the art would be able to calculate the density of the coated material using the modified apparatus disclosed by Doi et al., the admitted prior art, and Subramanian et al.

Applicant also asserts the Doi et al. reference uses a trial spray in advance for spray density calibration or a feed-forward system, while the Subramanian et al. reference uses a feed-back system. The Doi et al. reference does not address using a trial spray in advance for spray density calibration. In any event, the Subramanian et al. reference uses a test wafer in much the same way as disclosed by the Applicant in the Specification (page 13, line 5 – page 14, line 20), by first spraying onto a test wafer, and then measuring the resulting trial spray.

### *Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle A Lazor whose telephone number is 703-305-7976.

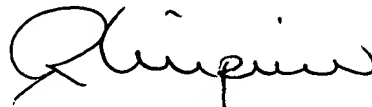
The examiner can normally be reached on Mon - Thurs 6:30 - 4:00, Fridays 6:30 - 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 703-308-3853. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



MAL  
May 7, 2003



RICHARD CRISPINO  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700